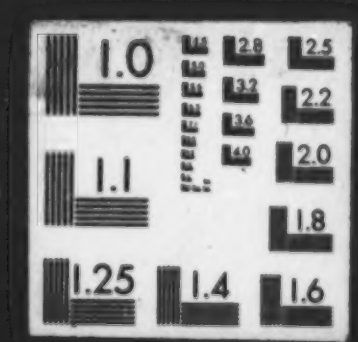


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PROTECTING OUR WATER RESOURCES. THE
FEDERAL WATER POLLUTION CONTROL PROGRAM

Public Health Service
Washington, D. C.

1962

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protecting

OUR WATER RESOURCES

THE FEDERAL WATER POLLUTION CONTROL PROGRAM

NATIONAL TECHNICAL
INFORMATION SERVICE



FOREWORD

Water pollution is today the most pressing single problem in resource management in our country. It has been allowed to increase until it now reaches most major rivers and streams. It is jeopardizing our water supplies, menacing the public health, destroying aquatic life, disgracing our environment. It threatens our economic growth. It is an enemy which must be met and conquered.

Concepts in water pollution control are changing to meet the impact of population and industrial growth. No longer can the use of ~~our~~ waterways as receptacles of uncontrolled wastes be accepted as a legitimate use of water. Whatever may have been acceptable or unavoidable in years past, our goal now and in the years ahead must be to prevent as much water pollution as possible. All users of waters have a responsibility for returning those waters to the stream as clean as is technically possible. This is the new scope of national water pollution control policy.

The Federal responsibility in the abatement of water pollution rests with the Secretary of Health, Education, and Welfare. It is carried on within the Public Health Service by the Division of Water Supply and Pollution Control, of which Dr. Gordon E. McCallum, Assistant Surgeon General, is Chief. The Federal Water Pollution Control Act, strengthened by new amendments passed in 1961, is a broad cooperative Federal-State-local program. It includes important provisions in law enforcement, scientific research, and Federal aid to State agencies and local communities. It is a carefully planned and balanced program, well equipped to do the tremendously important job which must be done in the years ahead.

Success in the effort to combat and defeat water pollution, however, depends on more than good legislation and energetic administration. It also depends on the support and understanding of all citizens and of all sections of our country and of our economy. Water pollution will be conquered when all of us recognize that it must be conquered if we are to prosper and grow.

JAMES M. QUIGLEY,

*Assistant Secretary
U.S. Department of Health, Education, and Welfare.*



THE NEED FOR ACTION

The Problem

Water pollution is one of the pressing social and economic issues of our time. It is directly related to the very rapid growths in population, urban living and industry, plus the unprecedented technological advances we have witnessed in the past two decades. It is related also to the physical limitation of our national water supply; to increased per capita water use which is three times that of the population growth rate; to discharges of vast amounts of pollution of a changing and complex nature; and to our failure to keep up with water pollution control needs in the years behind us.

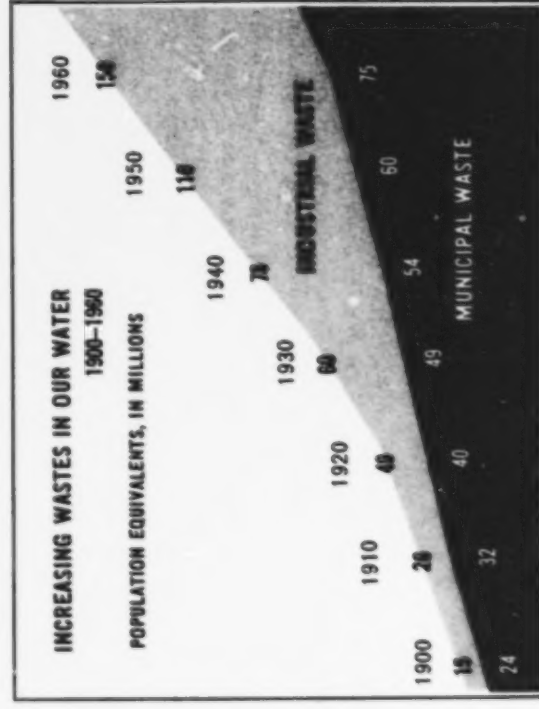
Water pollution affects the water resource, interfering with water uses. Without its control our country can never have enough clean water for its needs. It is a problem in public health, a problem in economics, conservation and esthetics, a problem in sports and recreation. By 1980, large areas of the United States will not have enough clean water for their needs unless a better job is done today in controlling water pollution.

Water Requirements

By 1980, the United States will need 600 billion gallons of usable water every day, but it will have only 515 billion gallons on a dependable daily basis coming from its streams, reservoirs and other water sources. We can no longer afford to waste water, particularly by careless disposal of wastes. Obviously we must depend upon reusing more and more water. We are already doing this in many of our major river systems. Waters of the Ohio, for example, are used nearly four times during periods of limited rainfall on their way from Pennsylvania to the Mississippi.

Domestic and municipal water use now exceeds 22 billion gallons daily. This demand is seven times that of 1900 and will be 12 times the 1900 level in 1980, reflecting in part a larger urban population and in part our higher standard of living. Bathrooms, kitchens and such special uses as home swimming pools call for much more water than families used a generation ago.

Industry is our largest user of water even today, and by 1980 it will need twice the 160 billion gallons daily it now uses. Farm needs, now requiring 141 billion gallons a day for irrigation, will also increase, although not so much as in the past.



Water Wastes

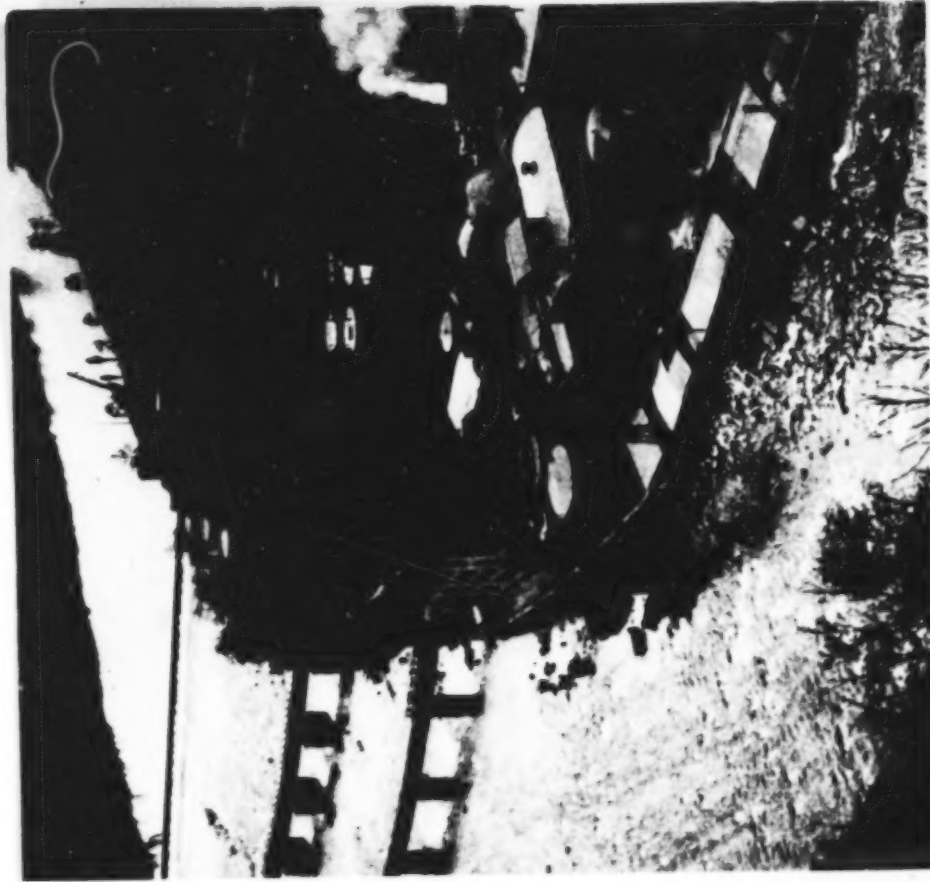
There is now nearly six times as much waste in our rivers, lakes and streams as 60 years ago, and the amount is still increasing. Most (three-fourths) of the water for our 185 million people and our \$490 billion industry comes from our rivers, lakes and streams. All wastes not burned, buried, released to the atmosphere or otherwise disposed of go back into them.

Fortunately, water is a resource which can be cleaned and used again. Many cities have sewage treatment plants and treat their wastes before returning them to watercourses. But not all: 25 percent of municipal wastes are still dumped into our rivers and streams as raw sewage and another 31 percent are given only primary treatment, which removes only settleable solids.

During the 1950's a total of only \$3.2 billion was spent on municipal sewage treatment facilities against an estimated need of \$5.1 billion. Construction activity increased in 1957 when Federal aid for this type of construction began, but not enough. During each year of the 1960's, cities must spend \$600 million if they are to meet their needs for waste treatment facilities. It is estimated that industry needs to spend at least an equal amount to treat or otherwise lessen its discharge of wastes.

In addition to greatly increased volumes of older municipal and industrial wastes, a major new pollution problem has emerged with the development of the new chemical substances such as manmade fibers, detergents, pesticides, etc. These are reaching watercourses in increasing numbers and quantity, both from manufacturing processes and from consumers' use of products. Little is known of the pollutional characteristics of these new wastes or their long-range toxic effects on man.

There is an immediate need to identify these countless new and complex wastes now invading our waters. New methods



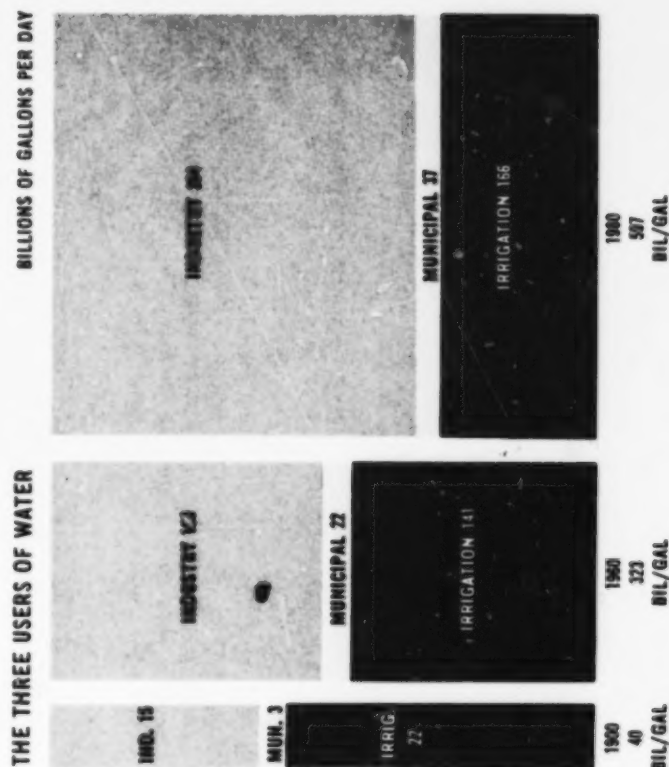
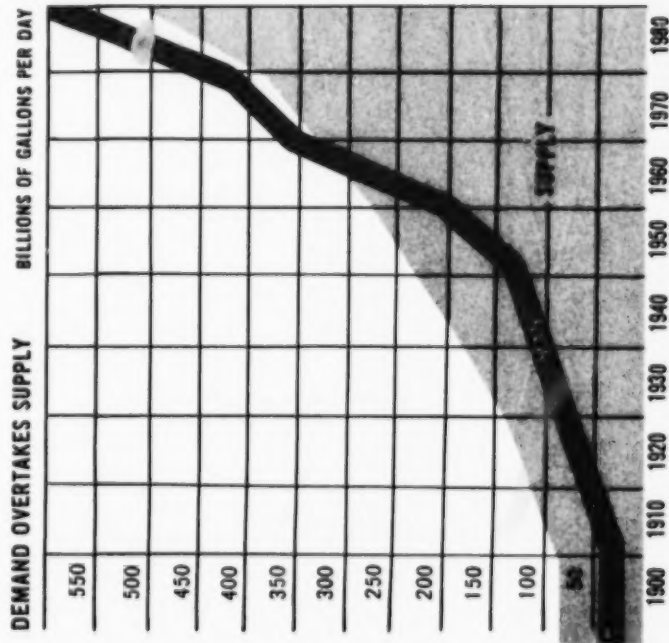
must be found to remove much more of the wastes, both old and new, than present methods can remove.

Still another new water pollution problem with serious health overtones has resulted from the growth of nuclear technology. Radioactivity in the Nation's lakes and streams is being kept under constant surveillance and must be effectively controlled.

Water Resources

The absolute limit of a nation's water supply is determined by its precipitation. Thirty inches fall on the continental United States yearly, unevenly distributed by geography and season. Twenty-two inches return into the atmosphere through transpiration and evaporation. Of what remains, only about 2 inches are at present available to man on a dependable year-round basis.

Our need for water is outstripping our supplies, and the situation will worsen in coming years unless we place a higher priority on curbing water pollution. Reservoirs and new technologies cannot increase our dependable economic supplies of water beyond a certain point. After this we must depend upon reusing more and more water, which cannot be done except through further pollution control.



FEDERAL LEGISLATION



History

In 1948, after nearly a half century of evaluating the growing water pollution problems, the 80th Congress passed the first Water Pollution Control Act (Public Law 845, 80th Cong.), and placed its administration in the Public Health Service.

This was enacted as temporary legislation which was to be reviewed after a trial period of 5 years, and revised on the basis of experience. It was extended for an additional 3 years to June 30, 1956, by Public Law 579, 82d Congress.

Long before the 1948 Act was passed, the Public Health Service was engaged in studies of water pollution problems. These had their beginnings in water borne disease at the turn of the century. The Public Health Service Act of 1912 authorized surveys and studies of water pollution, particularly as it affected human health. Those early investigations provided the basis for technical services to local, State and Federal agencies which still are an essential part of the Public Health Service program.

In 1956 the Congress enacted the Blatnik Act, the first permanent comprehensive Federal Water Pollution Control Act (Public Law 84-660). It was a broad extension and improvement of the 1948 Act.

During the first 5 years under the Act of 1956 the Federal water pollution control program accomplished much. It helped more than 2,700 cities build sewage treatment plants, cleaned up more than 4,000 miles of streams through use of the Federal enforcement authority, and laid the groundwork for an

effective, ongoing program of research. Long before the first 5 years came to a close, however, it became clear that the 1956 authority was not strong enough to cope with a rapidly growing problem of water pollution.

President Kennedy called for a stronger, more effective Federal role in the control of water pollution. In his message to Congress on February 23, 1961, President Kennedy said:

Our Nation has been blessed with a bountiful supply of water; but it is not a blessing we can regard with complacency * * * Our available water supply must be used to give maximum benefits for all purposes—hydroelectric power, irrigation and reclamation, navigation, recreation, health, home and industry * * * To meet all needs—domestic, agricultural, industrial, recreational—we shall have to use and reuse the same water, maintaining quality as well as quantity. In many areas of the country we need new sources of supply—but in all areas we must protect the supplies we have.

Secretary Ribicoff of the Department of Health, Education, and Welfare made a similar statement in testimony before the Public Works Committee of the House of Representatives on March 29, 1961:

We have not been able to move fast enough. We have hardly been able to hold our own against the rising tide of pollution. Our efforts to control pollution must be geared to the speed of the forces which produce it—a swiftly growing population and an expanding urban, industrial society. I want to say as firmly as possible that

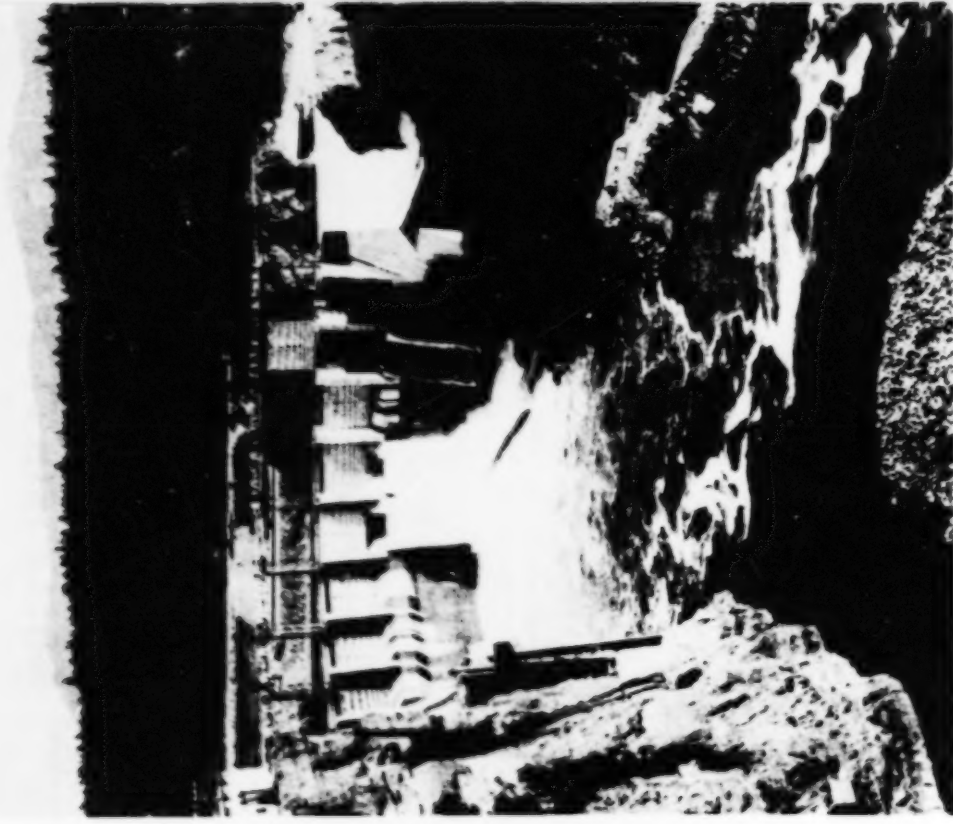
I will vigorously support an all-out attack on water pollution—an attack that fits the size of the problem.

In response to the President's message, Congress passed Public Law 87-88, amending the 1956 act, and this legislation was signed by President Kennedy on July 20, 1961. The new legislation does five important things:

- It increases Federal support for the construction of municipal waste treatment facilities.
- It broadens and strengthens the Federal Government's enforcement powers.
- It calls for an intensified program of research looking toward more effective methods of pollution control, with special emphasis on regional variations.
- It authorizes increased Federal support of State and interstate pollution control programs.
- It establishes in law the principle of water storage in planning and building Federal reservoirs to maintain water quality during periods of low flow.

Congressional Policy

In authorizing a Federal water pollution control program, Congress made it clear that primary responsibility in this field rests with the States, with the Federal Government in a supporting role. Unchanged since the first act of 1948 is the declared policy of Congress "to recognize, preserve, and protect the primary responsibilities and rights of the States in controlling water pollution." Added in the 1956 law and retained in 1961 is that "nothing in this act shall be construed as impairing or in any manner affecting any right or jurisdiction of the States with respect to the waters (including boundary waters) of such States." The act further declares it to be the policy "to support and aid technical research relating to the prevention and control of water pollution, and to provide



Federal technical services and financial aid to State and interstate agencies and to municipalities in connection with the prevention and control of water pollution."

Administering the Program

Under the acts of 1948 and 1956 the Federal Water Pollution Control program was carried on within the Public Health Service with the primary administrative responsibility lodged in the Surgeon General. The 1961 bill transferred this responsibility to the Secretary of Health, Education, and Welfare, who has designated an Assistant Secretary to represent him in relation to the program's operations and to serve as chairman of the Water Pollution Control Advisory Board.

Operation of the program is carried on by the Division of Water Supply and Pollution Control in the Public Health Service. About one-fourth of the Division staff is maintained in Washington, D.C., to determine policy, to guide program direction, and to coordinate with other Federal agencies. Since the program is basically a field operation, approximately 75 percent of the staff is assigned to field offices and projects. In this way Division activities are close to the problems, and field staffs have been able to establish close working relationships with State, interstate, and local agencies involved.

Research and related activities are carried out at the Service's Robert A. Taft Sanitary Engineering Center in Cincinnati, Ohio. Special field projects, investigations, and technical assistance services are carried out by the staffs at both the Sanitary Engineering Center and the Regional Offices, and, in some cases, at specific project offices within the Regions.

REGIONAL OFFICES

Region I Northeast Atlantic (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont) 120 Boylston Street, Boston 16, Mass.

Region II North Atlantic (Delaware, New Jersey, New York, Pennsylvania) 42 Broadway, New York 4, N.Y.

Region III Middle Atlantic (District of Columbia, Kentucky, Maryland, North Carolina, Virginia, West Virginia, Puerto Rico, Virgin Islands) 700 East Jefferson Street, Charlottesville, Va.

Region IV Southeast (Alabama, Florida, Georgia, Mississippi, South Carolina, Tennessee), 50 Seventh Street NE., Atlanta, Ga.

Region V Great Lakes-Upper Mississippi (Illinois, Indiana, Michigan, Ohio, Wisconsin), Room 712, New Post Office Building, 433 West Van Buren Street, Chicago 7, Ill.

Region VI Missouri Basin (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota) 911 Walnut Street, Kansas City 6, Mo.

Region VII Southwest-Lower Mississippi (Arkansas, Louisiana, New Mexico, Oklahoma, Texas) 1114 Commerce Street, Dallas 2, Tex.

Region VIII Mountain (Colorado, Idaho, Montana, Utah, Wyoming) Room 551, 621 17th Street, Denver 2, Colo.

Region IX Pacific Northwest (Alaska, Oregon, Washington) Room 570, Pittock Block, Portland 5, Oreg.

Pacific Southwest (Arizona, California, Nevada, Hawaii) 447 Federal Office Building, Civic Center, San Francisco 2, Calif.

BUILDING WASTE TREAT- MENT PLANTS

Federal grants to municipalities to assist them in the construction of waste treatment facilities were a new and major provision of the Federal Water Pollution Control Act of 1956. Grants to communities were limited to 30 percent of the cost of construction, or \$250,000, whichever was less. Appropriations up to \$50 million annually were authorized.

During the first 6 years (fiscal 1957-62 inclusive) of this program, grants were made to 3,500 communities to help them build \$1,690 million worth of plants; \$290 million of this, or 17 percent, were Federal funds, the rest local. These finished plants are bringing about the improvement of 38,000 miles of rivers and streams and serving 35 million people.

However impressive these achievements, they were plainly not enough. Annual investment in municipal sewage treatment construction leaped from \$270 million per year before the 1956 legislation to \$460 million per year after its passage. But \$600 million per year is needed for 4,244 new plants, the enlargement of 633 more, and for 413 other plants which require additional treatment.

To meet this need, the new legislation provides an increase in construction grants. Under the new legislation \$80 million went to cities in fiscal year 1962, \$90 million is authorized in the following year, and \$100 million in each of the next 4 years. A city can now receive 30 percent of construction costs or \$600,000, whichever is less, and it can now join with other communities in the construction of a combined facility, up to a total limit of \$2,400,000.

TREATMENT WORKS CONSTRUCTION:

1952-1961 EXPENDITURES
1962-1970 NEEDS

AVERAGE
ANNUAL NEED
\$29 MILLION
1962-1970

AVERAGE
1962-1961

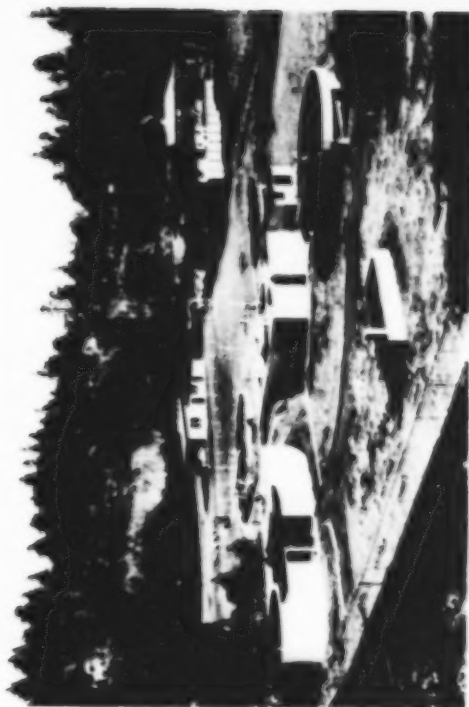
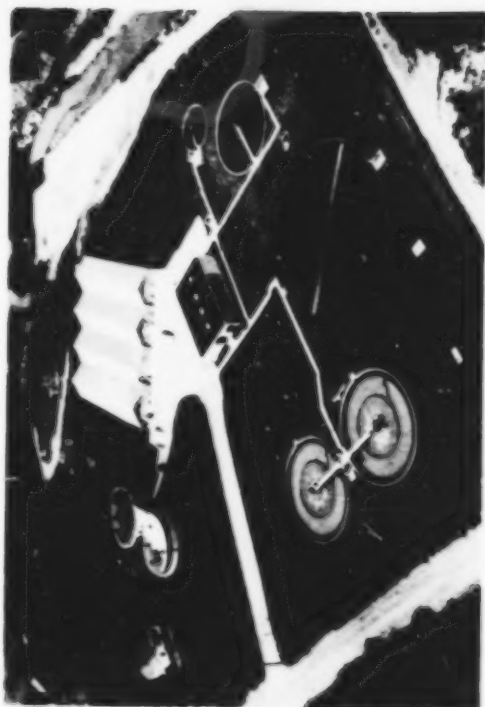
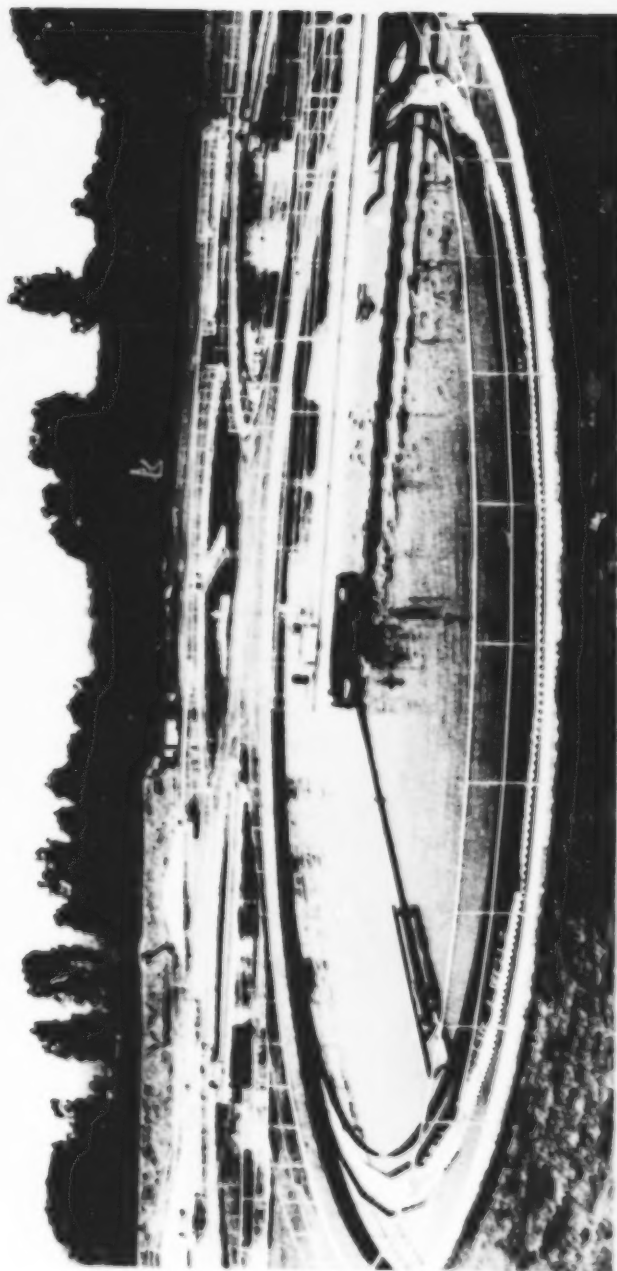
\$350
MILLION

\$380
MILLION

AVERAGE
1962-1961

\$270
MILLION

\$220
MILLION



GRANT ALLOCATIONS FOR

State	Under the previous law	Under the new legislation		
		1961	1963	1964 through 1967
Total	\$50,000,000	\$80,000,000	\$100,000,000	\$100,000,000
Alabama	1,122,225	1,698,520	1,910,835	2,123,150
Alaska	426,625	585,560	658,755	731,950
Arizona	559,675	981,800	1,104,525	1,227,250
Arkansas	1,007,675	1,484,520	1,670,085	1,855,650
California	2,048,650	3,981,840	4,479,570	4,977,300
Colorado	630,000	1,038,560	1,168,380	1,298,200
Connecticut	619,425	1,035,720	1,165,185	1,294,650
Delaware	343,175	559,800	629,775	699,750
Dist. of Col.	450,650	634,080	713,340	792,600
Florida	900,350	1,785,240	2,008,335	2,231,550
Georgia	1,126,950	1,765,320	1,985,985	2,206,650
Hawaii	532,725	796,040	895,845	995,050
Idaho	588,925	919,240	1,034,145	1,149,050
Illinois	1,755,700	2,739,760	3,082,230	3,424,700
Indiana	1,048,825	1,673,480	1,882,665	2,091,850
Iowa	886,425	1,302,800	1,465,650	1,628,500
Kansas	752,575	1,167,480	1,313,415	1,459,350
Kentucky	1,078,150	1,575,960	1,772,955	1,969,950
Louisiana	967,900	1,572,680	1,769,265	1,965,850
Maine	638,900	989,320	1,112,985	1,236,650
Maryland	759,500	1,269,240	1,427,895	1,586,550
Massachusetts	1,116,625	1,695,760	1,907,730	2,119,700
Michigan	1,417,600	2,320,320	2,610,360	2,900,400
Minnesota	930,325	1,442,880	1,623,240	1,803,600
Mississippi	1,173,750	1,720,480	1,935,540	2,150,600
Missouri	1,059,775	1,604,160	1,804,680	2,005,200
Montana	528,600	822,600	925,425	1,028,250
Nebraska	677,575	993,320	1,117,485	1,241,650
Nevada	358,225	571,920	643,410	714,900
New Hampshire	532,775	827,000	930,375	1,033,750

SEWAGE TREATMENT PLANTS

State	Under the previous law	Under the new legislation	1964 through 1967
New Jersey	\$1,116,575	\$2,089,350	\$2,321,500
New Mexico	538,800	1,090,980	1,212,200
New York	2,740,475	4,724,155	5,249,350
North Carolina	1,268,900	2,190,255	2,434,250
North Dakota	633,625	1,117,555	1,241,800
Ohio	1,664,900	3,057,435	3,397,150
Oklahoma	856,400	1,448,460	1,609,400
Oregon	662,775	1,169,100	1,299,000
Pennsylvania	2,099,125	3,489,210	3,876,900
Rhode Island	844,475	934,200	1,038,000
South Carolina	1,034,425	1,773,900	1,971,000
South Dakota	646,400	1,124,730	1,249,700
Tennessee	1,121,875	1,910,250	2,122,500
Texas	1,717,925	3,177,360	3,530,400
Utah	592,275	1,058,310	1,175,900
Vermont	545,025	975,690	1,084,100
Virginia	1,035,450	1,833,705	2,037,450
Washington	775,325	1,386,495	1,540,550
West Virginia	867,675	1,386,540	1,540,600
Wisconsin	967,225	1,714,995	1,905,550
Wyoming	462,975	801,450	890,500
Guam		1,412,910	1,569,900
Puerto Rico	1,178,925	1,977,975	2,197,750
Virgin Islands	823,375	1,404,270	1,560,300

Years shown are fiscal years. Changes in per capita income may affect State allotments in the years 1963 through 1967.

ENFORCING WATER POLLUTION ABATEMENT

The Federal Water Pollution Control Act provides enforcement procedures under which the Government can take action to abate water pollution. A total of 18 actions were taken from 1956 through fiscal year 1962. These have involved more than 250 cities and a like number of industries, and have affected some 4,000 miles of interstate rivers and streams.

Enforcement procedures consist of three steps: (1) a conference, comprising one, or a number of sessions, is held on the problem; (2) if suitable abatement action is not taken, a public hearing is held before a specially constituted board; (3) if pollution is not abated within the time specified in the notice following the public hearing, the Secretary of Health, Education, and Welfare may request the Attorney General to bring suit to secure abatement in interstate situations.

Of the 18 conferences held so far, 8 have been taken on the initiative of the Federal Government and 10 at the request of the individual States. Enforcement actions have covered many of the major cities and industries and such long standing pollution problems as the Potomac River in the vicinity of Washington, D.C., the Missouri River at St. Louis, and the Columbia River at Portland, Oreg.

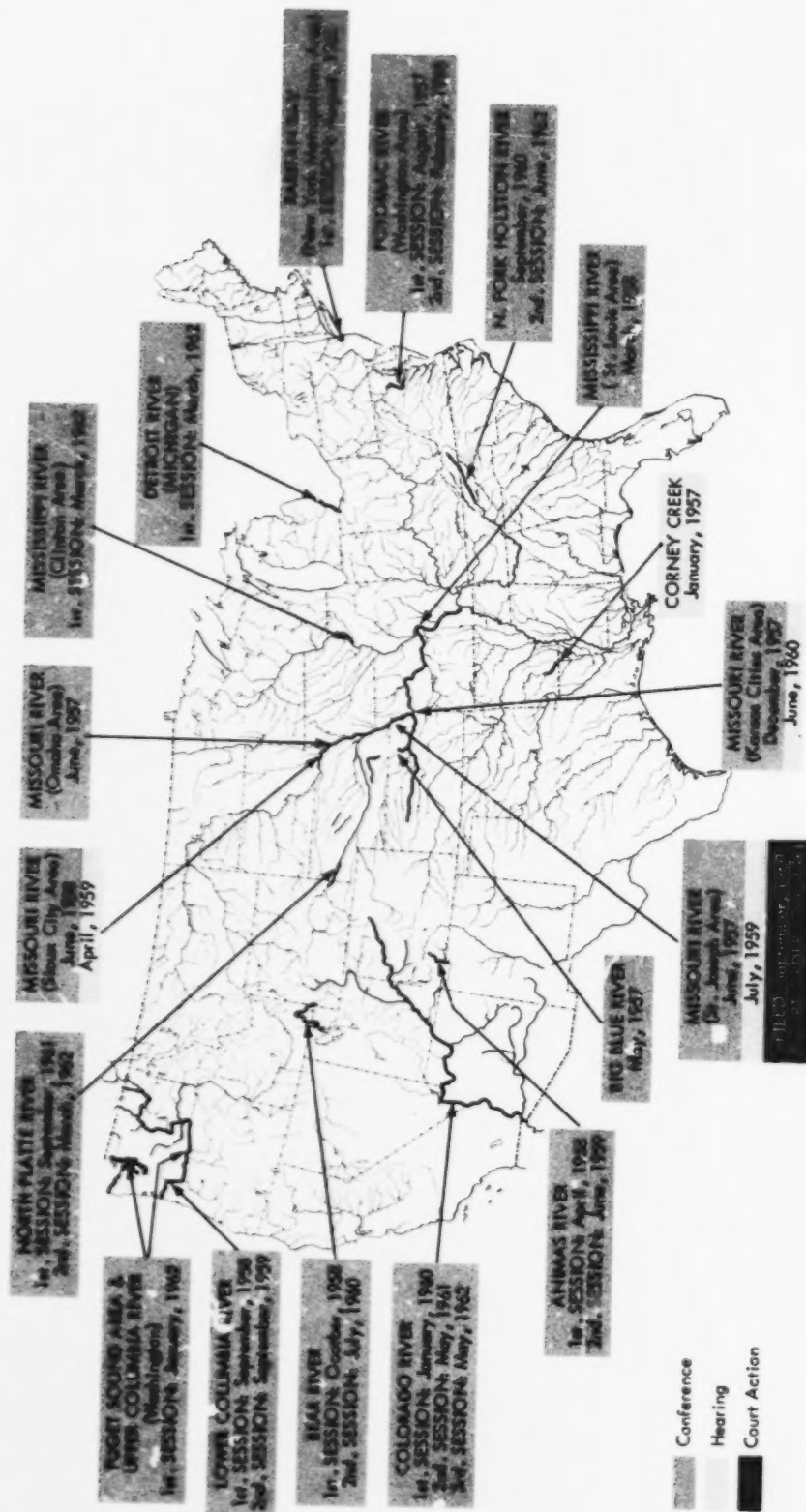
Authority for Federal action under the 1956 act was limited to cases involving pollution of interstate waters which endangered the health or welfare of persons in a State other than that in which the pollution discharge originated. Excluded from enforcement jurisdiction were the greater part of the Great Lakes and their tributaries, the coastal waters of the Nation, many important coastal streams, intrastate water bodies such as the Detroit River, those of Florida, and all rivers, streams, lake and coastal waters of Alaska, Hawaii, and the Virgin Islands and Puerto Rico. International boundary

streams such as the St. Lawrence, Niagara, lower Colorado, and Rio Grande Rivers were also unprotected by this act. The same situation existed as to international streams flowing across the northern and southern borders of the United States into our international neighbors. Of the estimated 26,000 water bodies in the United States, there are only an estimated 4,000 of an interstate nature.

The 1961 legislation extended Federal pollution abatement jurisdiction to all interstate or navigable waters, including coastal waters. Federal action can now be initiated at the request of the Governor of a State in which the pollution originates, even though the pollution is confined to that State. Similarly, if Federal court action against intrastate pollution becomes necessary, this can be initiated with the consent of the Governor. Thus, in a purely intrastate matter, the prerogatives of the State are preserved. At the same time, however, the mechanism is established to bring into play the power of the Federal Government against those responsible for intrastate pollution if the State desires it.

The new law also broadens the Federal Government's authority in interstate pollution situations. Under the previous law, the Government on its own initiative could call a conference in connection with an interstate pollution problem, but it could initiate Federal court action only with the consent of the State in which the pollution originated or at the request of a downstream State. Under the new law, court action can be initiated by the Government without such request or consent. Furthermore, the new law gives municipalities a more definite role in the initiation of Federal enforcement action in interstate situations.

FEDERAL ENFORCEMENT ACTIONS



RESEARCH IN POLLUTION CONTROL

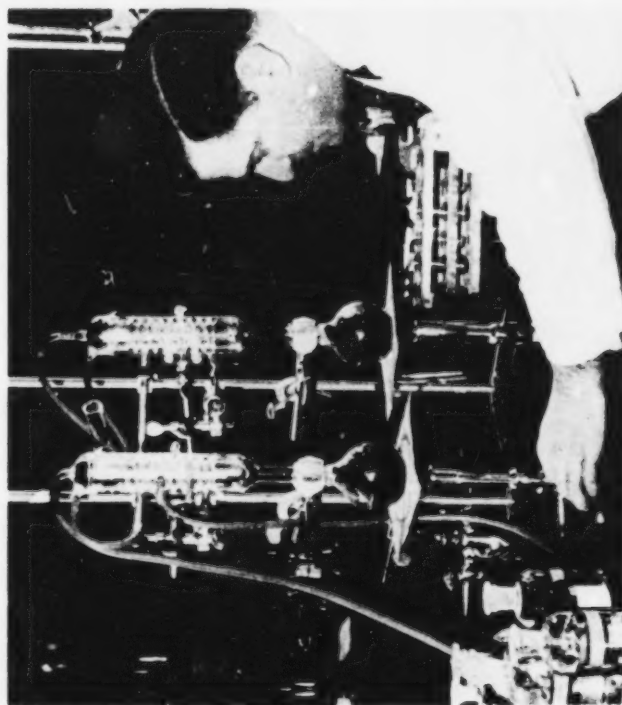
During the 1950's, the total amount of money spent each year for research in pollution control averaged less than \$4 million, including Federal and State funds and money from universities and industry. The new Federal legislation helps meet this deficiency by authorizing an accelerated program, setting up new laboratories, and establishing new areas for research studies.

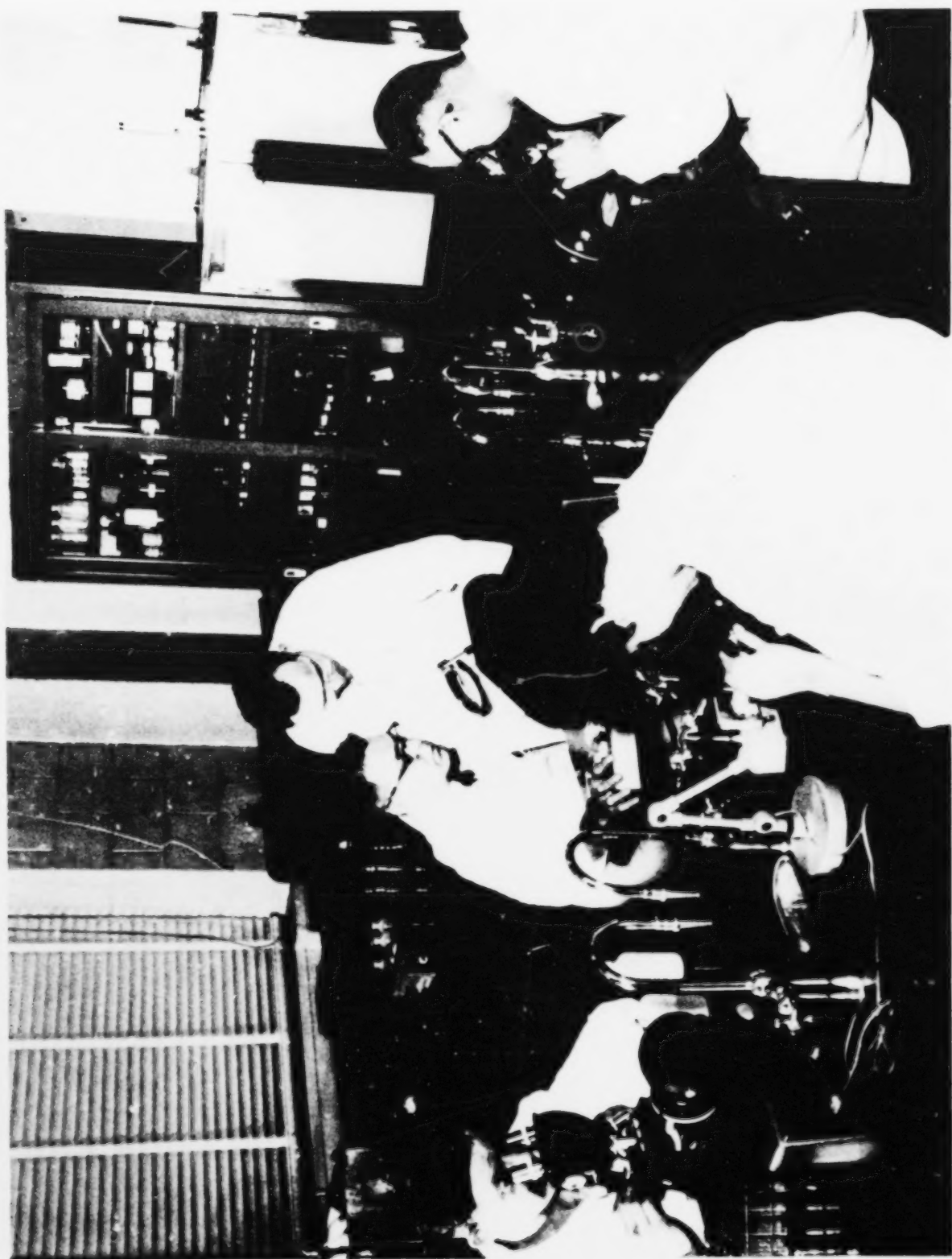
At least seven new regional laboratories are called for by the new law, to be established in various parts of the continental United States and in Alaska. These new laboratories will give scientists and engineers the opportunity of studying purely regional pollution problems at first hand—problems such as acid mine drainage in the Ohio and Potomac Basins, cold-weather waste disposal in Alaska, etc.

The first four regional laboratories have been announced for Corvallis, Oreg., to serve the Northwest region, and for Ada, Okla., to serve the Southwest, for College, Alaska (near Fairbanks), and for Athens, Ga., to serve the Southeast.

The new legislation authorizes \$5 million per year up to a total of \$25 million to study:

- (a) Practicable means of treating municipal sewage and other waterborne wastes to remove the maximum possible amounts of physical, chemical, and biological pollutants in order to restore and maintain the maximum amount of the Nation's water at a quality suitable for repeated reuse;
- (b) Improved methods and procedures to identify and measure the effects of pollutants on water uses, including those pollutants created by new technological developments; and
- (c) Methods and procedures for evaluating the effects on water quality and water uses of augmented streamflows to





control water pollution not susceptible to other means of abatement.

Headquarters for all intramural research for the program is at the Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio. Here 4 major fields are currently being investigated by a group of some 65 engineers, scientists, and specialists: (1) Accounting for wastes which go into the stream—determining their origins—defining them—and predicting their potential pollutional effects on public water supply, recreation, industrial requirements, fish and wildlife, etc.; (2) developing more effective and economical methods of treating and disposing of wastes; (3) developing more effective and economical methods of water quality surveillance to reflect significant changes in water quality and to permit proper interpretation of data from water sampling; and (4) finding ways to treat contaminated water satisfactorily for repeated reuse.

In addition to the work carried on at the Sanitary Engineering Center, specific research projects are also carried on under Government contract, sponsored by the Center. A very important Federal service is that of giving advanced training for engineers, chemists and other scientists from Federal and State agencies, municipalities, and industries. Short, intensive laboratory and classroom courses are given at the Sani-

tary Engineering Center, and seminars and conferences on major subjects of interest are held.

In addition to intramural and contract research, there is a sizable program of *extramural* grants for research in colleges, universities, and other public and private institutions and agencies. Three new programs have recently received appropriations. They are: Research Fellowships to individuals; Training Grants to teaching institutions; and Demonstration Grants to study and determine the feasibility of new methods of water pollution control.

Indicative of the stepped-up research program are the research grants awarded during fiscal year 1962. These include 159 grants totaling \$2,670,000 for studies in water, sewage and industrial wastes. One hundred of these grants, totaling \$1,654,988 were for continued support of projects underway during the previous year. The remaining 59, totaling \$1,015,012, were for new projects. The grants represent work being carried on in 38 States and the District of Columbia. One hundred and forty-six of the awards were made to 68 colleges and universities; 5 were made to private research organizations; 5 to State and local official agencies; and 1 each to a consulting firm, an individual, and a national professional organization.

STATE PROGRAM GRANTS

Under the new Federal legislation, grants to State and interstate water pollution control agencies to assist them in establishing and maintaining adequate control programs have been extended (to June 30, 1968) and increased from \$3 million to \$5 million a year. In its 5-year history this program grant device has encouraged the States to increase their own appropriations for water pollution control from \$4.2 million in 1956 to \$6.7 million in 1960. Personnel engaged in water pollution

control activities have increased 63 percent. Program grants are not intended to replace State funds. States are required to pay from one-third to two-thirds of the costs of their expanded programs, with individual State allocations of grant funds based on population, extent of the water pollution problem, and the financial need of the State. The grants to States and interstate agencies for fiscal year 1962 (a \$4.8 million appropriation) are shown in the following table.

PROGRAM GRANTS TO STATE AND INTERSTATE AGENCIES

FISCAL YEAR 1962

State, Territory or Agency	Alloiment	State, Territory or Agency	Alloiment	Territory or Agency	Alloiment
Alabama	\$93, 700	Montana	\$23, 400	District of Columbia	\$48, 300
Alaska	15, 100	Nebraska	38, 400	Guam	42, 400
Arizona	34, 700	Nevada	15, 600	Puerto Rico	102, 000
Arkansas	61, 200	New Hampshire	32, 200	Virgin Islands	41, 500
California	259, 000	New Jersey	140, 400	Bi-State Development Agency (Missouri-Illi- nois)	18, 100
Colorado	42, 800	New Mexico	29, 200	Interstate Commission on the Delaware River Basin	42, 100
Connecticut	80, 600	New York	296, 900	Interstate Commission on the Potomac River Basin	23, 600
Delaware	46, 300	North Carolina	128, 200	Interstate Sanitation Com- mission (New York, New Jersey, Connecticut)	68, 600
Florida	107, 200	North Dakota	25, 500	Klamath River Compact Commission	7, 500
Georgia	105, 300	Ohio	201, 000	New England Interstate Water Pollution Control Commission	42, 900
Hawaii	34, 500	Oklahoma	60, 300	Ohio River Valley Water Sanitation Commission	97, 200
Idaho	25, 400	Oregon	44, 600	Total	\$4, 800, 000
Illinois	190, 500	Pennsylvania	232, 000		
Indiana	107, 900	Rhode Island	58, 900		
Iowa	67, 800	South Carolina	79, 100		
Kansas	52, 700	South Dakota	26, 400		
Kentucky	85, 000	Tennessee	100, 000		
Louisiana	86, 400	Texas	185, 500		
Maine	35, 500	Utah	29, 200		
Maryland	86, 200	Vermont	25, 100		
Massachusetts	130, 800	Virginia	94, 700		
Michigan	165, 600	Washington	61, 700		
Minnesota	79, 400	West Virginia	56, 900		
Mississippi	78, 400	Wisconsin	97, 400		
Missouri	93, 800	Wyoming	17, 400		

SPECIAL PROGRAMS

Comprehensive Planning Studies

The water resources in every area must serve many States and municipalities, and must be available for many uses. They can do so in an orderly and efficient manner only if all present and proposed uses—and abuses—of the water resources are examined, their interrelationships considered, and if the growth pattern of the area is carefully measured.

Developing a comprehensive water quality management program may require, depending on the size of the basin, from 3 to 8 years and from \$2 million to \$12 million. The magnitude and complexity of such comprehensive planning studies requires Federal participation and it was so established in the Federal Water Pollution Control Act. These programs are developed in close cooperation with other Federal water re-

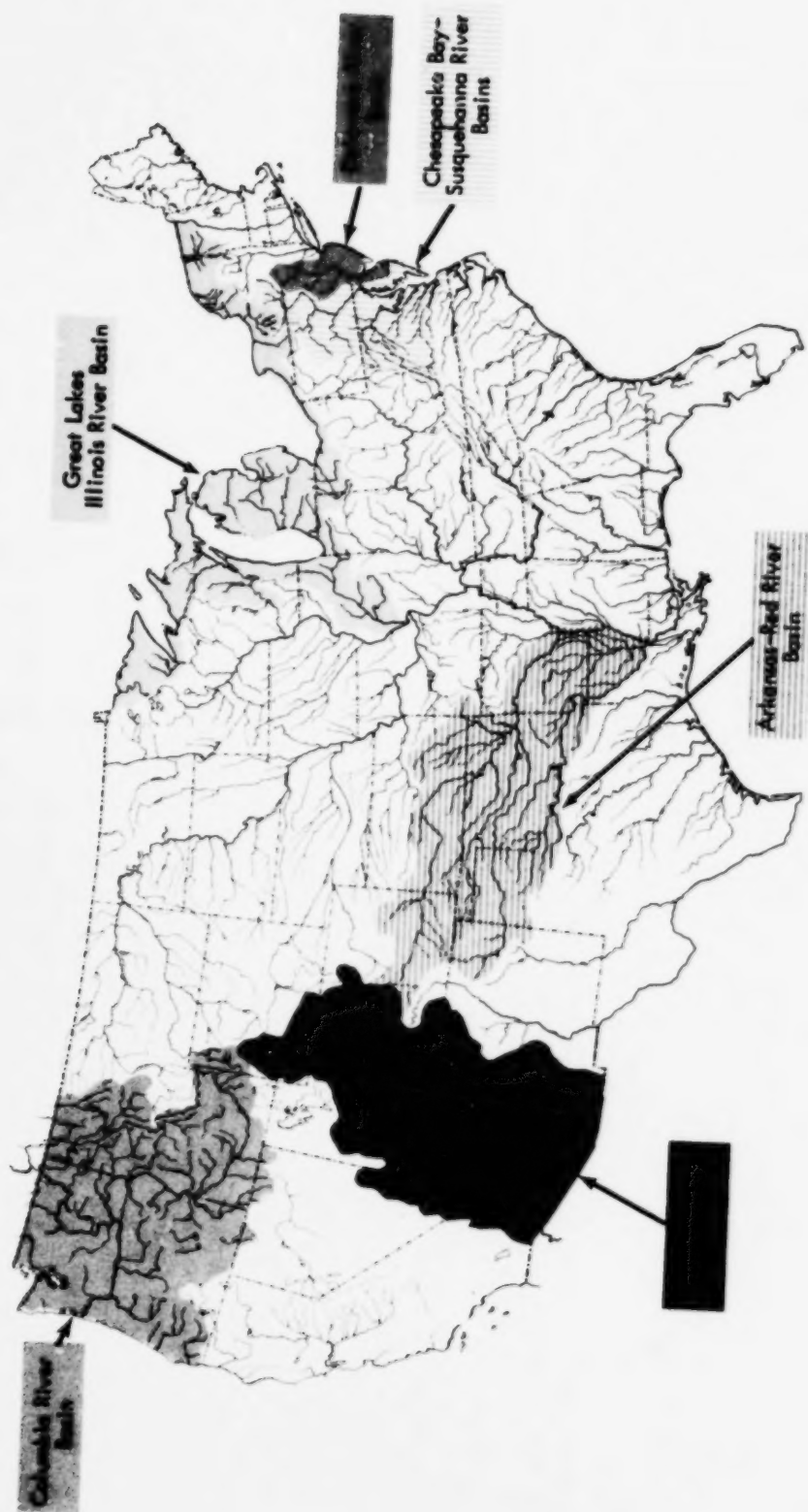
source agencies and with the State and local authorities concerned.

Determining and maintaining water quality appropriate for its many uses is an obvious and inherent part of such comprehensive studies. It is the responsibility of the Department of Health, Education, and Welfare to assess the causes of water pollution in these studies, develop agreements for desired water uses, outline pollution control measures, and set up time tables for accomplishing them.

Six programs were underway in 1962 covering vast areas of the United States: the Arkansas-Red Rivers, the Colorado and the Columbia Basins, the Great Lakes-Illinois River Waterway Basin, the Delaware Estuary and the Chesapeake Bay and its tributaries.



COMPREHENSIVE RIVER BASIN PROJECTS



Stream Flow Augmentation

The 1961 amendments to the Water Pollution Control Act establish the principle of water quality control as a criterion in planning and building Federal reservoirs. This provision of the law recognizes the principle of stream flow augmentation under which water is stored for release during periods of low flow to reduce the levels of water pollution by dilution. The law points out that such augmented flow is to be used only as a supplement to other pollution abatement activities and not as a substitute for waste treatment.

Until it becomes possible to remove much more of the contaminants from municipal and industrial wastes than can now be done, it will become increasingly necessary to assist in the control of stream water quality by the addition of clean water stored for that purpose. Flow augmentation has thus become a major component of water quality control.

The new amendments to the Water Pollution Control Act state that the value of storage shall be taken into account in determining the economic value of the entire project of which it is a part, and costs shall be allocated to the purpose of water quality control in a manner which will insure that all project purposes share equitably in the benefits of multiple-purpose

construction. Further provision is made that the beneficiaries of the water quality control features shall be identified, and if the benefits are widespread or national in scope, the costs of such features shall be nonreimbursable.

The Water Quality Network

Since 1957 the Public Health Service has operated a National Water Quality Network to maintain a constant check on water pollution in our rivers and streams. There are now over 100 checkpoints located on interstate waters and a network of more than 300 such stations is planned in the future. These are supplemented by sampling stations maintained by State and local agencies.

Water from the network stations is tested by the Public Health Service in cooperation with State and local agencies and industries. Data collected include bacterial, organic and inorganic pollutants, and radioactivity. Since the U.S.S.R. resumed testing of nuclear weapons in the fall of 1961, and the United States in 1962, the network has been able to give very accurate recordings on the resulting nuclear fallout that reaches water. In addition to the inventory of water quality, other inventories are maintained of sewage and industrial waste treatment facilities, of water supply facilities, and of pollution-caused fish kills. These are kept up to date and published periodically.

Economic Studies

Studies in the area of economics to determine reliable ways of evaluating what pollution is costing local areas, States, regions and the Nation, and the costs which can be economically justified in its control, are also a part of the water pollution control program.

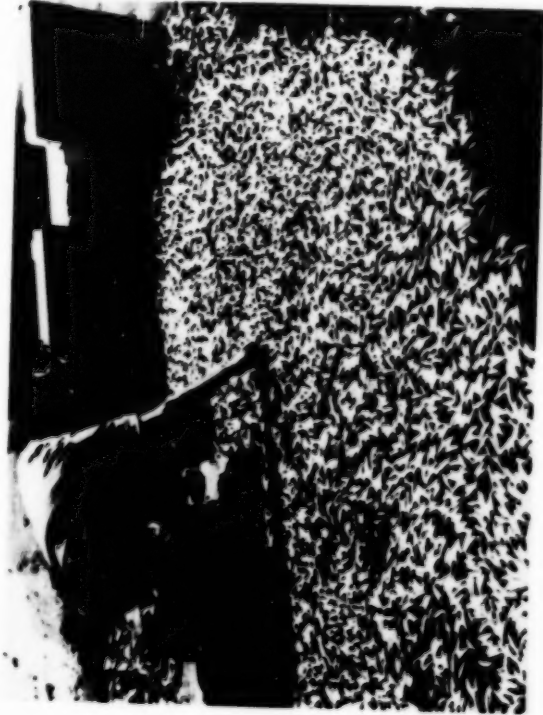
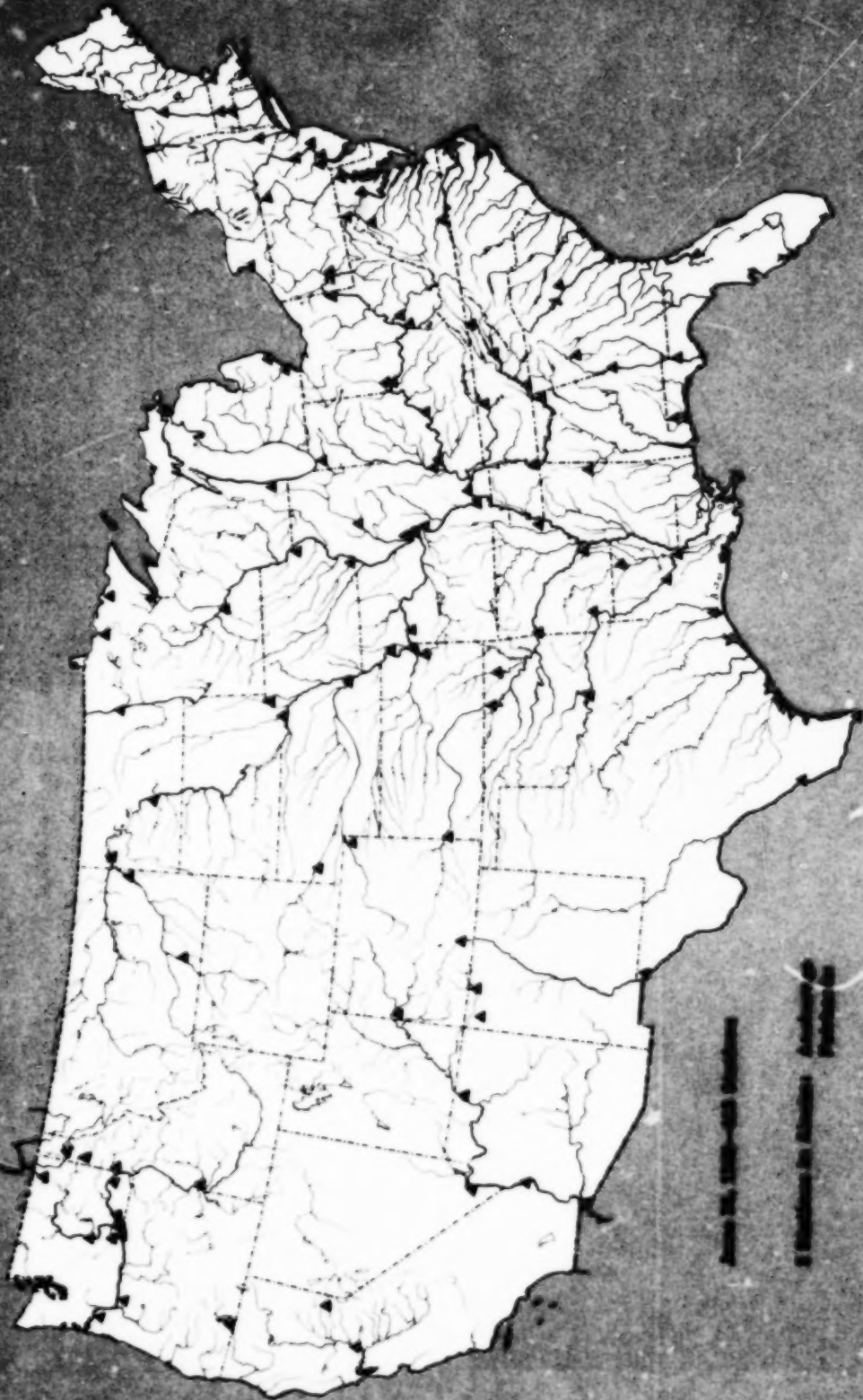


FIG. NATURAL WATER QUALITY NETWORK SAMPLING STATIONS



June 15, 1980-83 Station

8 Stations in 1980-83 Station

OTHER COOPERATIVE PROGRAMS

As developed over the years and now strengthened by the 1961 amendments to the Federal Water Pollution Control Act, the program includes many cooperative activities with States, interstate agencies, other Federal agencies, and private and industrial groups. The most important fields of such activities are listed below.

Uniform State Laws

The Water Pollution Control Act directs the Secretary of Health, Education, and Welfare to encourage the enactment of improved and, where practical, uniform State laws for water pollution control. To this end, a "Suggested State Water Pollution Control Act" has been issued, and some 40 States have used it as a basis and guide for new legislation or improvement of their existing laws.

The National Technical Task Committee on Industrial Wastes

The committee is comprised of representatives of industry. It was set up in 1950 at the invitation of the Surgeon General to collect and disseminate information on industrial water uses and industrial wastes. The Secretariat for the Committee is provided by the Department of Health, Education, and Welfare. Sixty-seven persons, listed as full, alternate, affiliate, and liaison members, now serve on the Task Committee. Thirty-four industries and cooperating organizations are represented. New industries are added from time to time.

Recent Committee activities include helping to expand the stream sampling network, assembling data on industrial water use, stimulating interest in programs for training industry



personnel in the field of water pollution control, and publishing a news quarterly.

Interstate Compacts

The Federal Water Pollution Control Act directs the Secretary to encourage compacts between States for the prevention and control of water pollution. To date, Congress has given its consent to the formation of seven interstate compacts having substantial powers in this activity:

- 1—New England Interstate Water Pollution Control Commission (Maine, New Hampshire, Vermont, Rhode Island, Connecticut, Massachusetts, New York).
- 2—Interstate Sanitation Commission (Connecticut, New York, New Jersey).
- 3—Interstate Commission on the Potomac River (Maryland, Virginia, Pennsylvania, West Virginia, District of Columbia).
- 4—Ohio River Valley Water Sanitation Compact (New York, Pennsylvania, Ohio, Illinois, Indiana, West Virginia, Kentucky, Virginia).
- 5—Klamath River Basin Compact (Oregon, California).
- 6—Tennessee River Basin Water Pollution Control Compact (Tennessee, Alabama, Georgia, Kentucky, Mississippi, North Carolina, Virginia). This compact has not been activated because all States have not yet ratified.
- 7—Delaware River Basin Compact (Delaware, Pennsylvania, New York, New Jersey).

Control of Pollution from Federal Installations

The Federal Act directs Federal agencies to cooperate with the Department of Health, Education, and Welfare and with State and interstate agencies and municipalities in controlling pollu-



tion from Federal installations. Department responsibilities include making inventory of such pollution, providing technical and consultative services to all the jurisdictions involved as required, acting as liaison between jurisdictions as necessary, and providing research services and field investigations. An inventory covering all States, some 40 Federal jurisdictions, and approximately 10,000 Federal establishments has been completed and published to determine the extent of, and remedial measures for, pollution coming from Federal installations. The new act of 1961 brings Federal installations within the public hearing provision of the Federal enforcement authority.

The Inter-Agency Committee on Water Resources was organized in 1954 to coordinate the work of Federal agencies having water resource interests in the multipurpose approach to water resources programs and projects. In addition to the Department of Health, Education, and Welfare, member agencies include the Departments of the Army, Commerce, Labor, Interior, and Agriculture and the Federal Power Commission.

The Department of Health, Education, and Welfare coordinates its water supply and pollution control programs with the water resources plans and projects of other Federal agencies, and provides technical services to them. It acts as liaison between these Federal agencies and State, interstate, and local water supply and pollution control agencies. It also reviews the public health, water supply, and pollution control aspects of water development projects of other Federal agencies; engages in studies and investigations; and submits recommendations as necessary. About 50 such Federal projects require review each year. In addition to the parent Committee in Washington, there are five field committees—Columbia Basin Inter-Agency Committee, Missouri Basin Inter-Agency Committee, Arkansas-White-Red Basins Inter-Agency Committee, Pacific Southwest Inter-Agency Committee, and Northeast Resources Committee.

Agreements With Other Federal Agencies

The Department provides technical services in water supply and pollution control to other Federal agencies through mutually cooperative agreements. An example of services required under such agreements is one under the Water Supply Act of 1958. By agreement with the Department of the Army, determination is made of future storage requirements for water supply for municipalities and industries over a 100-year period, together with the economic value thereof, for Corps of Engineers projects. Some 90 requests for these determinations had been made through December 31, 1961.

Other Federal agencies with which agreements are in force include the Bureau of Reclamation, the Federal Housing Authority, the Atomic Energy Commission, National Park Service, and the U.S. Fish and Wildlife Service.

International Commissions

Technical services are provided to two international commissions—the International Joint Commission (United States and Canada) and the International Boundary and Water Commission (United States and Mexico). Under the guidance of an Advisory Board on Control of Pollution of Boundary Waters, the Public Health Service carries out an extensive field program designed to obtain the water quality objectives of the International Joint Commission. It investigates all references to pollution of U.S. boundary waters made by the two countries. To provide these technical services, field units, including laboratories, are maintained at Detroit and Buffalo.

The Public Health Service provides technical services to the U.S. Section of the International Boundary and Water Commission. This involves working with the Mexican Section on problems of sanitation of international waters. Currently, problems caused by pollution of the Tijuana River are under study.



STATE AND TERRITORY

ALABAMA Water Improvement Commission, Montgomery	IOWA State Department of Health, Des Moines
ALASKA Division of Health, Juneau	KANSAS State Board of Health, Topeka
ARIZONA State Department of Health, Phoenix	KENTUCKY Water Pollution Control Commission, Frankfort
ARKANSAS State Water Pollution Control Commission, Little Rock	LOUISIANA Stream Control Commission, Baton Rouge
CALIFORNIA State Water Pollution Control Board, Sacramento	MAINE Water Improvement Commission, Augusta
COLORADO State Department of Public Health, Denver	MARYLAND State Department of Health, Baltimore
CONNECTICUT Water Resources Commission, Hartford	MASSACHUSETTS Department of Public Health, Boston
DELAWARE State Water Pollution Commission, Dover	MICHIGAN Water Resources Commission, Lansing
DISTRICT OF COLUMBIA Department of Public Health, Washington, D.C.	MINNESOTA Water Pollution Control Commission, Minneapolis
FLORIDA State Board of Health, Jacksonville	MISSISSIPPI State Board of Health, Jackson
GEORGIA Department of Public Health, Atlanta	MISSOURI State Water Pollution Board, Jefferson City
GUAM Division of Public Health, Agana	MONTANA State Board of Health, Helena
HAWAII Department of Health, Honolulu	NEBRASKA Department of Health, Lincoln
IDAHO Department of Health, Boise	NEVADA State Department of Health, Carson City
ILLINOIS State Sanitary Water Board, Springfield	NEW HAMPSHIRE Water Pollution Commission, Concord
INDIANA Stream Pollution Control Board, Indianapolis	NEW JERSEY State Department of Health, Trenton
	NEW MEXICO Department of Public Health, Santa Fe
	NEW YORK State Department of Health, Albany

POLLUTION CONTROL AGENCIES

NORTH CAROLINA State Stream Sanitation Committee,
Raleigh

NORTH DAKOTA State Department of Health, Bismarck

OHIO Water Pollution Control Board, Columbus

OKLAHOMA State Department of Health, Oklahoma City

OREGON State Board of Health, Portland

PENNSYLVANIA Sanitary Water Board, State Department
of Health, Harrisburg

PUERTO RICO Department of Health, San Juan

RHODE ISLAND Department of Health, Providence

SOUTH CAROLINA State Water Pollution Control Authority,
Columbia

SOUTH DAKOTA Committee on Water Pollution, Pierre

TENNESSEE Stream Pollution Control Board, Nashville

TEXAS State Department of Health, Austin

UTAH Water Pollution Control Board, Salt Lake City

VERMONT Department of Water Resources, Montpelier

VIRGINIA State Water Control Board, Richmond

VIRGIN ISLANDS Department of Health, Saint Thomas

WASHINGTON State Pollution Control Commission, Olympia

WEST VIRGINIA Division of Water Resources, Charleston

WISCONSIN State Committee on Water Pollution, Madison

WYOMING State Department of Public Health, Cheyenne

ADVISORY BOARD

Water Pollution Control Advisory Board

A nine-member Advisory Board is established by the Federal Water Pollution Control Act. Members are appointed by the President, with the Secretary of Health, Education, and Welfare or his designee as Chairman. They are selected from outstanding leaders in industry, conservation, civic affairs, and State and local government who have demonstrated an active interest in water pollution problems. Three new members are appointed each year and terms are for 3 years. No member is eligible for reappointment within 1 year after the end of his preceding term. The Board meets from four to six times a year, usually holding two of its meetings outside the city of Washington, D.C., to study regional water pollution problems of unusual significance. The Board advises, consults with, and makes recommendations to the Secretary on policy relating to

his responsibilities under the Federal Water Pollution Control Act.

Serving as Chairman of the Board is James M. Quigley, Assistant Secretary, Department of Health, Education, and Welfare, Washington, D.C. Executive Secretary is Robert C. Ayers. Present members are:

John A. Biggs, Director, Department of Game, Olympia, Wash.

Dr. Clair S. Boruff, Technical Director, Hiram Walker and Sons, Peoria, Ill.

Charles H. Callison, Assistant to the President, National Audubon Society, New York, N.Y.

M. James Gleason, Chairman, Multnomah County Commission, Portland, Oreg.

Dr. Maurice K. Goddard, Secretary, Pennsylvania Department of Forests and Waters, Harrisburg, Pa.

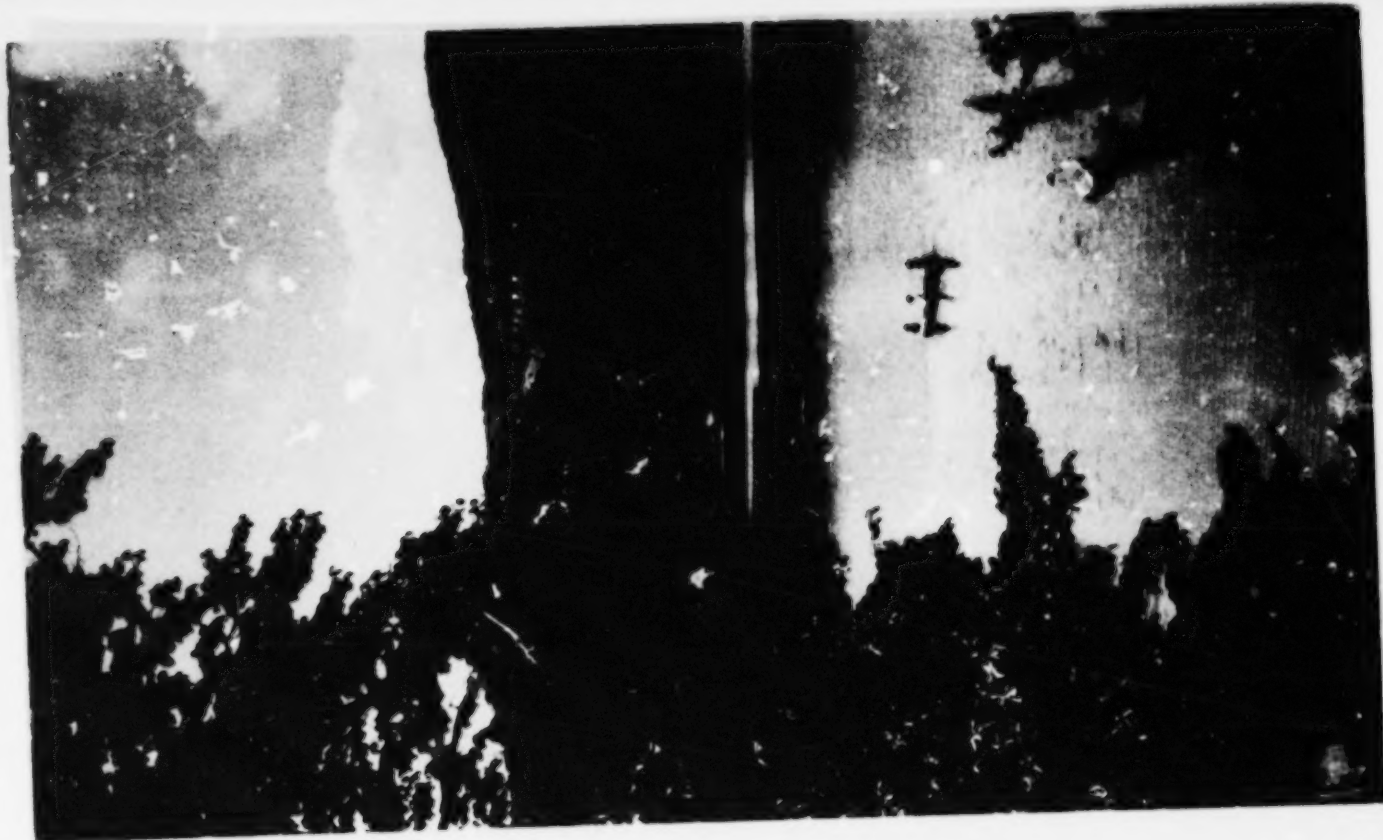
Lee Roy Matthias, Executive Vice President, Red River Valley Association, Shreveport, La.

Tom McCann, President, McCann Construction Co., Fort Worth, Tex.

Ed E. Reid, Executive Director, Alabama League of Municipalities, Montgomery, Ala.

William E. Warne, Director, California Department of Water Resources, Sacramento, Calif.





U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service
Division of Water Supply and Pollution Control
Washington 25, D.C.